What is claimed is:

1. A method for queuing packets for transmission comprising:

    assigning each packet a first value;

    dynamically assigning each said packet a second value; and

5   queuing each said packet for transmission using said first and said second

    value.

2. The method of claim 1, wherein said first value comprises a sequence number

    having a value of:

    $$S = (W + (T * D) >> scale)\%N.$$

10 3. The method of claim 2, wherein said second value comprises a real sequence

    number RS having a value of:

    if (S < W),   then RS = (S + N);

    else RS = S.

4. The method of claim 2, wherein N is chosen such that (2*N – 1) fits into the

15 word length.

5. The method of claim 3, wherein RS is dynamically computed.

6. An apparatus for queuing packets for transmission comprising:

    means for assigning each packet a first value;

    means for dynamically assigning each said packet a second value; and

20 means for queuing each said packet for transmission using said first and said

    second value.

7. The apparatus of claim 6, wherein said first value comprises a sequence number having a value of:

$$S = (W + (T * D) >> scale)\%N .$$

8. The apparatus of claim 7, wherein said second value comprises a real sequence number RS having a value of:

if $(S < W)$,   then RS = (S + N);

else RS = S.

9. The apparatus of claim 7, wherein N is chosen such that $(2*N - 1)$ fits into the word length.

10. The apparatus of claim 8, further including means for dynamically computing RS.

11. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for queuing packets for transmission comprising:

assigning each packet a first value;

dynamically assigning each said packet a second value; and

queuing each said packet for transmission using said first and said second value.

12. The program storage device of claim 11, wherein said first value comprises a sequence number having a value of:

$$S = (W + (T * D) >> scale)\%N .$$

13. The program storage device of claim 12, wherein said second value comprises a real sequence number RS having a value of:

   if (S < W),   then RS = (S + N);

   else RS = S.

5   14. The program storage device of claim 12, wherein N is chosen such that (2*N – 1) fits into the word length.

15. The program storage device of claim 13, wherein RS is dynamically computed.

16. A router comprising:

   a processor configured to assign each packet a first value;

10   dynamically assign each said packet a second value; and

   queue each said packet for transmission using said first and said second value.

17. The router of claim 16, wherein said first value comprises a sequence number having a value of:

$$S = (W + (T * D) >> scale)\%N.$$

15   18. The router of claim 17, wherein said second value comprises a real sequence number RS having a value of:

   if (S < W),   then RS = (S + N);

   else RS = S.

19. The router of claim 17, wherein N is chosen such that (2*N – 1) fits into the word

20   length.

20. The router of claim 18, wherein RS is dynamically computed.

15

21. A machine-readable medium including a packet to be routed, said packet further including at least a first value and a second value, wherein each said first and second values are used for queuing.

22. The machine readable medium, wherein said second value is dynamically

5   assigned.

23. The router of claim 22, wherein said first value comprises a sequence number having a value of:

$$S = (W + (T * D) >> scale)\%N.$$

24. The router of claim 23, wherein said second value comprises a real sequence

10   number RS having a value of:

if (S < W),   then RS = (S + N);

else RS = S.

25. The router of claim 24, wherein N is chosen such that (2*N – 1) fits into the word length.